

Inventory-Sales Ratios in Manufacturing and Trade, 1961-72

INVENTORY-SALES ratios are frequently used to evaluate current holdings of inventories and to project this volatile component of GNP. The usefulness of these ratios stems from well-known regularities in their behavior. Cyclically, they are inversely related to business activity: they tend to rise as sales fall and fall as sales rise. Over the longer run, management is always eager to reduce I-S ratios, and this desire may have intensified. Technological developments, for instance improved transportation and increasing use of computers, facilitate the reduction of I-S ratios. Factors such as these may have accounted for whatever secular decline in the ratios can be identified in the postwar period.

However, from time to time major irregularities in I-S ratios crop up, and it is important to understand their causes so that the ratios can be used judiciously. A major event of this type occurred in 1966 when I-S ratios rose rapidly and, contrary to general expectation, remained high for a prolonged period. It may still be remembered that many forecasters of the business outlook went wrong because they foresaw a decline in inventories that never occurred. The major purpose of this study is to analyze the causes of this irregularity in 1966 and its influence on subsequent I-S ratio patterns.¹ A brief account of the 1961-65 period provides the background for this analysis.

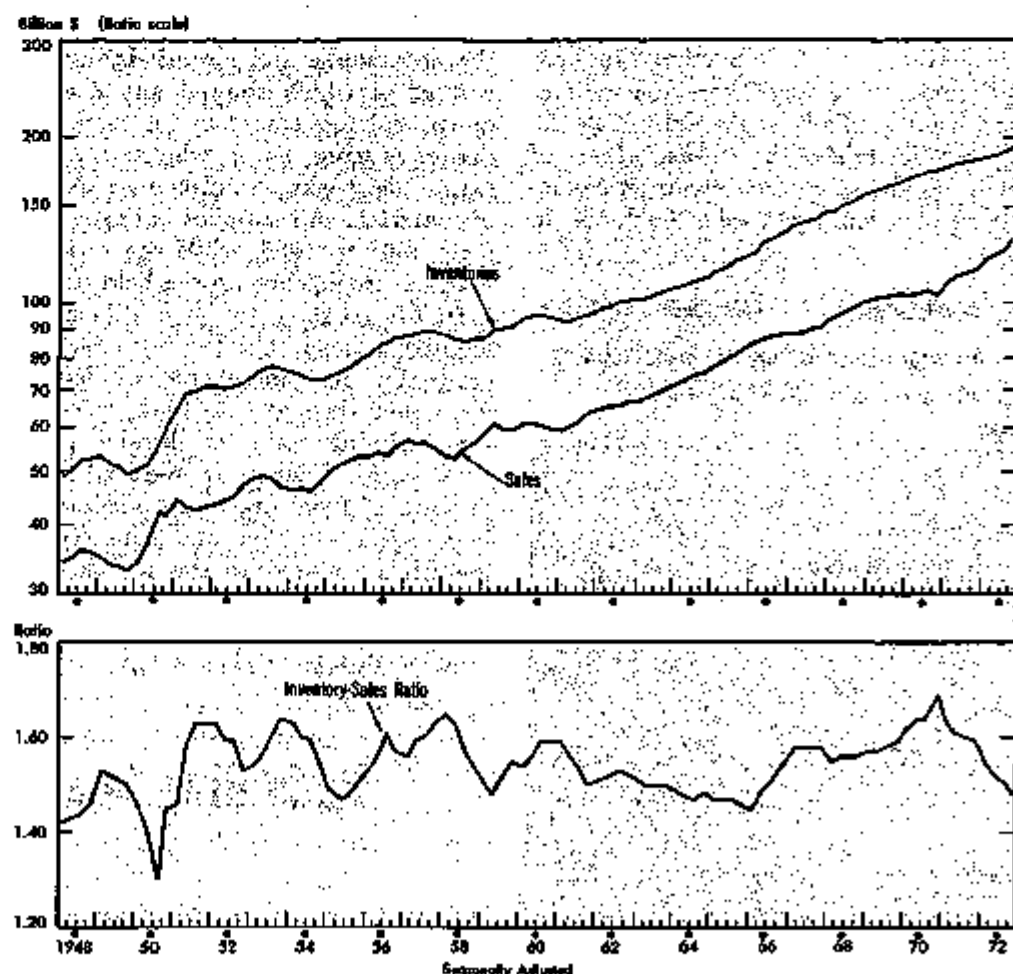
The I-S ratios for this study were

calculated on a quarterly basis using seasonally adjusted end-of-quarter book value inventories and seasonally adjusted average monthly sales for the quarter. These book value data undergo

adjustment before use in the national income and product accounts. In these accounts, inventories used up are uniformly valued at replacement cost. Their valuation in book value data

CHART 18

Inventories, Sales, and Inventory-Sales Ratio for Total Manufacturing and Trade



U.S. Department of Commerce, Bureau of Economic Analysis

Data: BEA-Current

1973

1. Another study that concentrated on this period came to conclusions generally similar to those below. See Barry Eastwood, "Current Inventory-Sales Relationships," *Brookings Papers on Economic Activity*, 1970:1, pp. 181-190.

depends on the particular accounting method employed and in general differs from replacement cost. Further, the

industrial coverage of the book value data is narrower, but greater industrial detail is available.

Decline in the Inventory-Sales Ratio, 1961-65

THROUGH 1961, the movement of the I-S ratio for manufacturing and trade firms was dominated by the pattern of cyclical rise and fall (chart 1). The decline from 1.59 to 1.50 during 1961 can be viewed as a retreat from the high level of the 1960-61 recession as inventories were first liquidated and then accumulated at a rate slower than that at which sales recovered.

The ratio recorded a gradual but steady decline from 1962 to the first quarter of 1966, when it reached 1.45. In addition to developments in specific industries, there were general factors that probably contributed to the slower growth of inventories than of sales. While sales grew steadily, capacity utilization and order backlogs in

manufacturing increased only moderately at least through 1964, indicating a relatively easy supply situation. Also, a long period of industrial price stability dampened the motive to hedge against price increases.

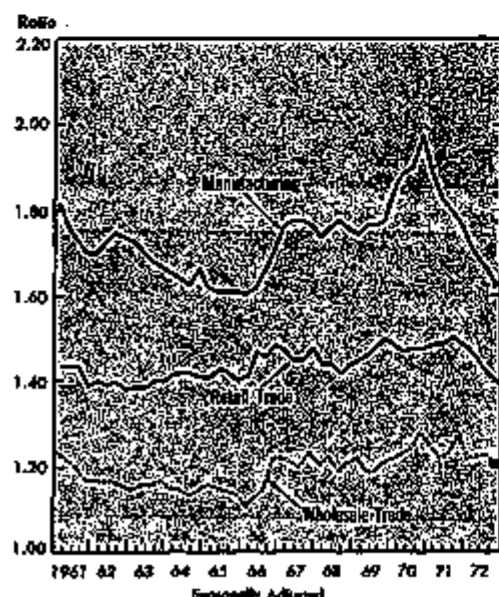
The decline in the I-S ratio from 1961 through the end of this period was pronounced in manufacturing (chart 2). Most manufacturing industries, both durables and nondurables, showed a decline in the ratio over this period. The principal exceptions were the automobile and aircraft industries, neither of which showed any decisive downward movement in the ratio. For manufacturing as a whole, the I-S ratios for stocks of finished goods and of materials and supplies both declined from 1961 to 1965, while the ratio for work-in-process inventories held steady.

In the trade sector, it is difficult to identify a trend. The I-S ratio declined gradually for merchant wholesalers from 1962 through late 1964, reflecting the declining ratio for durable goods wholesalers. Thereafter, reduced levels of sales of furniture and home furnishings and of lumber and construction materials—related to the weakness in housing activity—pushed the ratios higher for wholesalers in those two Census Bureau "kinds of business."

That, in combination with moderate upward movement in the ratio for the automotive group (largely importers and auto parts dealers), precluded further decline in 1965 in the ratio for durables wholesalers and wholesalers overall. The ratio for nondurable wholesalers, representing over half of wholesale trade volume, is dominated by the stability of the groceries and related products group and so was stable throughout the period 1961-65.

The I-S ratio for retailers declined from 1961 to 1962; thereafter, it was roughly stable with disparate movements in the components. The overall ratio for nondurable goods retailers, who accounted for approximately two-thirds of total retail sales, was steady in the period 1961-65. This reflected a very steady ratio for the food group with mild offsetting movements in the general merchandise and "all other" groups. The ratio for the automotive group advanced during 1962-65, as it did over the 1960's as a whole. This uptrend was partly caused by the proliferation over time of auto models and accessories, as well as the competitive desire to provide quick delivery. In the case of nonautomotive durable goods dealers, the overall I-S ratio and the ratios for component kinds of business during 1961-65 reflected fairly clear alternations between periods of rising sales with relatively flat inventories and rising inventories with relatively flat sales. As in wholesale trade, the period of rising ratios, comprising most of 1964 and early 1965, corresponded with the period in which the weakness in residential construction had an impact on lumber-building-hardware dealers and furniture and appliance dealers.

CHART 19
Inventory-Sales Ratios for Manufacturing and Retail and Wholesale Trade



Ratio Rises to a High Plateau, 1966-69

BY 1965, factors in the general economic situation tended to encourage an increase in holdings of inventories relative to sales: capacity utilization was approaching moderately high levels,

slower deliveries were becoming more frequent, and prices were rising more rapidly. Reflecting such factors, manufacturing and trade firms added \$10.1 billion to their inventories between the

first quarters of 1965 and of 1966—about twice as much as the average annual addition during the 3 previous years. However, sales advanced strongly, increasing \$3.2 billion during the same period, and the I-S ratio dropped to a 15-year low at the beginning of 1966. Thereafter, the situation altered significantly as sales advanced slowly, increasing only \$2.2 billion through the first quarter of 1967, and the sales slowdown evidently resulted in some unintended inventory accumulation. Firms added \$15.1 billion to their inventories between the first quarters of 1966 and of 1967, and the I-S ratio increased sharply over that period from 1.45 to 1.58, a level that was maintained through the rest of 1967. Compared with other three- or four-quarter increases in the ratio in the years since World War II, this advance was second in size only to that which occurred during the 1950-51 upsurge related to the outbreak of the Korean war.

In addition to these developments usually associated with a recession, the rise in the ratio during 1966 was in part caused by the impact that higher military spending had on specific manufacturing industries. Manufacturers thus affected and others in the machinery and nonautomotive transportation equipment industries, together with dealers in certain durable goods lines of trade—electrical goods, and machinery, equipment, and supplies in wholesaling, and furniture and appliances, and "all other" durables in retailing—largely account for the quite high and steady ratio for total manufacturing and trade through the 1967-69 period. In general, the movements of the ratios of component industries and kinds of business showed greater diversity during 1967-69 than they had in 1961-65.

Manufacturing

Producers of nondurables were not greatly affected by the slowdown of economic growth in late 1966 and early 1967. The rise in their overall I-S ratio was mild, and for those industries in which a cyclical type of rise occurred, corrections moved the ratio back to or near earlier levels by late 1967 or early 1968.³

Producers of durables encountered a slowing of sales expansion in 1966 followed by a widespread sales decline in the first quarter of 1967. This slowing and decline occurred in most industries, although it was less noticeable in defense-related production. Inventory accumulation, apparently unintended to some degree, continued throughout the sales slowdown, and the resulting rises in durables producers' I-S ratios were generally steep.

By mid-1967, the ratios had begun to move lower in most major durables industries. By mid-1968, the ratios for manufacturers of instruments and related products, stone-clay-glass products, and "all other" durables had dropped back below their 1963-65 averages and close to the levels of early 1966. Complicated by the threat of a mid-1968 steel strike, the ratio for producers of primary metals moved irregularly in 1967-69, but by the final quarter of 1969 was back almost to the 1966 low. The ratio for producers of fabricated metals reached its lowest point in the decade in the first quarter of 1968, rose as a consequence of the strike-related inventory buildup, and after the strike was averted again moved lower.

The ratio for producers of motor vehicles was slightly higher and its movement more irregular in 1967-69 than in the early 1960's. The major groups of durables not yet accounted for—aircraft and electrical and nonelectrical machinery—may be combined for further analysis into the Census Bureau's market category "equipment and defense products (except automotive)."

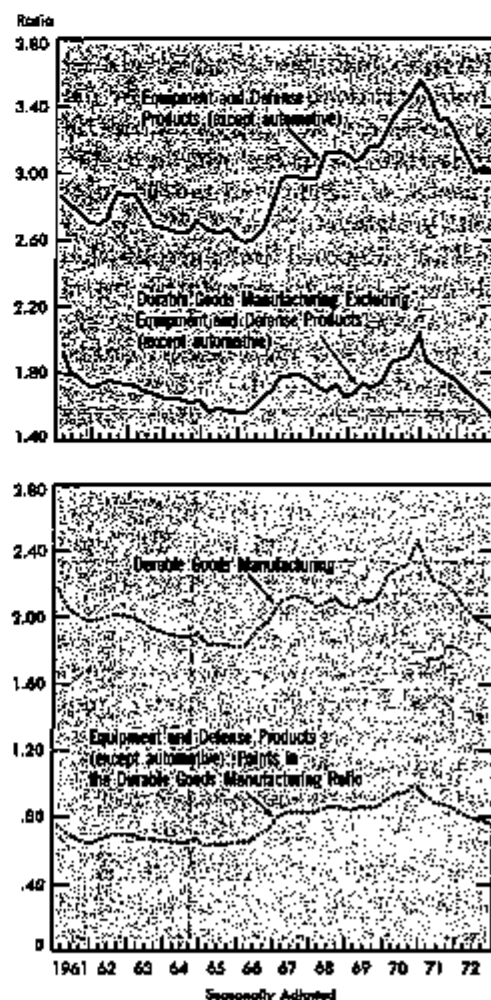
Equipment and defense products

It will be shown below that the high ratio for durable goods manufacturing during 1967-69 is largely attributable to the equipment and defense products market group. When a rough division

of that market group is made, defense products industries had greater influence in raising the I-S ratio for that group than did producers' capital goods. Further, a large part of the upward shift in the ratio of goods-in-process inventories to sales for durables manufacturing can be traced to defense products industries.

The influence of a particular component on the I-S ratio of an aggregate depends on the weight, or importance, of that component within the aggregate and the I-S ratio of the component. Therefore, the influence of the equipment and defense products group on the ratio for all durables manufacturing can be traced to two elements: (1) the mix of industries, i.e., the importance of

CHART 20
Manufacturing Inventory-Sales Ratios



3. The average of the quarterly I-S ratios for 1963-65 is used in the text and table as a marker from which to gauge the subsequent changes in the I-S ratios. Although the 1963-65 period has characteristics that would suggest its being interpreted as having a "normal" I-S ratio—no wide inventory swings, steady sales growth, reasonable price stability, and others—such an interpretation was not intended in calculating the average.

equipment and defense products within durables manufacturing; (2) the I-S ratio of the equipment and defense products group. The second element is in turn separable into: (2a) the mix of industries within the equipment and defense products group; (2b) the I-S ratios within the equipment and defense products group. The elements are reviewed in turn below.

To examine the first element, the industrial mix is measured by the percentage that shipments of the component industry or group are of total shipments. Shipments of equipment and defense products averaged 24 percent of total manufacturing durables shipments during 1963-65, expanded during 1966-67 to 28 percent, and remained at 27 or 28 percent through 1969.

The upper panel of chart 3 presents the data for examining the second element. It shows that the I-S ratio for equipment and defense products is high relative to the ratio for the rest of durables manufacturing. It also shows that the ratio for equipment and defense products rose sharply from mid-1966 to early 1967, steadied through the first quarter of 1968, then moved intermittently higher through 1969.

The combined influence of the two elements can be calculated by multi-

plying the equipment and defense products group's recorded I-S ratio for each quarter by the percentage that the shipments of that group were of total durables shipments for that quarter. The product is the number of points that the two elements together contribute to the I-S ratio for durable goods manufacturing. As is shown in the lower panel of chart 3, equipment and defense products gave significant upward push to the ratio for durables manufacturers through 1967: from the first quarter of 1966 to the fourth quarter of 1967, this group contributed 19 points of the total net rise of 29 points. The number of points contributed by this group held steady at a high level through 1969, partly offsetting the effect on the total durables manufacturing ratio of the decline in the contribution of other industries.

The relative influence of the two elements can be roughly measured as follows. First, the I-S ratio for the equipment and defense products group is held constant while the industrial mix in durables manufacturing is allowed to take its actual value each quarter. This isolates the change in the number of points due to the changing industrial mix. Second, the industrial mix is held constant while the group's I-S ratio is allowed to take its actual

value each quarter. This isolates the change in the number of points due to the changing I-S ratio. Such separation shows that, from the first quarter of 1966 to the fourth quarter of 1967, of the 19 points contributed by equipment and defense products to the rise in the durables ratio, 10 points were due to the increasing importance of equipment and defense products in the industrial mix and 9 points were due to the rising I-S ratio for this group. Then, during 1968-69, a rising I-S ratio for equipment and defense products offset a decline in this group's importance in total manufacturing durables shipments.

As noted above, the behavior of the I-S ratio for the equipment and defense products group can be analyzed by considering two elements—the industrial mix within the group and I-S ratios within the group. To do this, the group was roughly divided into defense products industries and producers' capital goods industries.³ In the period 1966-

3. These are the Census Bureau's "old" series, which have been discontinued. They have been recalculated for this study using recently revised inventory and sales data because the "new" series, designated as defense capital goods (or defense products) and nondefense capital goods, extend back only to 1968. The defense products industries include communications equipment, complete aircraft, aircraft parts, and ordnance; the series includes significant amounts of nondefense work in these industries and omits defense work performed in the shipbuilding industry. The producers' capital goods industries include nonelectrical machinery (except farm machinery and machine shops), electrical machinery (except household appliances, communications equipment, and electronic components), shipbuilding and repairing, and railroad and streetcar equipment.

Table 1.—Inventory-Sales Ratios in Manufacturing, by Stage of Fabrication

	Nondurables			Transportation equipment			Electrical and non-electrical machinery			Other durables		
	Materials and supplies	Goods in process	Finished goods	Materials and supplies	Goods in process	Finished goods	Materials and supplies	Goods in process	Finished goods	Materials and supplies	Goods in process	Finished goods
1963-65.....	0.56	0.30	0.62	0.42	0.30	0.18	0.59	1.09	0.66	0.86	0.66	0.61
1966:												
I.....	.54	.20	.60	.30	.34	.16	.59	1.08	.59	.66	.56	.58
II.....	.55	.20	.60	.40	.94	.16	.61	1.05	.59	.66	.56	.55
III.....	.54	.20	.61	.47	1.07	.18	.63	1.10	.60	.66	.57	.55
IV.....	.55	.21	.62	.44	1.06	.18	.64	1.13	.62	.69	.58	.57
1967-69.....	.54	.21	.63	.47	1.35	.19	.66	1.20	.66	.68	.60	.50
1970:												
I.....	.53	.21	.65	.51	1.63	.23	.72	1.30	.74	.70	.61	.61
II.....	.53	.21	.67	.47	1.57	.22	.72	1.28	.75	.71	.63	.63
III.....	.52	.21	.67	.50	1.64	.22	.71	1.28	.76	.70	.65	.65
IV.....	.54	.21	.68	.60	1.84	.27	.73	1.25	.81	.74	.67	.69
1971:												
I.....	.52	.21	.67	.45	1.54	.21	.72	1.20	.80	.72	.65	.70
II.....	.52	.23	.68	.47	1.50	.21	.72	1.10	.77	.71	.60	.64
III.....	.51	.20	.66	.46	1.43	.19	.69	1.14	.75	.74	.63	.65
IV.....	.51	.20	.64	.42	1.54	.19	.68	1.09	.72	.71	.60	.63
1972:												
I.....	.49	.20	.62	.38	1.62	.18	.82	1.02	.68	.67	.63	.62
II.....	.49	.18	.61	.35	1.52	.18	.80	1.01	.67	.64	.61	.61
III.....	.48	.24	.61	.35	1.47	.18	.81	1.02	.67	.64	.65	.59
IV.....	.47	.19	.50	.32	1.48	.14	.81	1.01	.68	.62	.63	.58

* Preliminary.

69 the two components were subject to distinctly different demand situations which diversely affected the industrial mix and the I-S ratios.

The share of defense products industries within equipment and defense products increased from 44 percent at the beginning of 1966 to almost 53 percent by early 1968 and declined steadily thereafter. In contrast, the I-S ratio for defense products industries rose substantially through 1969. Thus, from 1966 into 1968, the changing mix within the equipment and defense products group and the rising I-S ratio for defense products industries both were operating to raise the I-S ratio for the group. However, from late 1968 onward the two elements were largely offsetting.

The major factor contributing to the rising ratio for defense products industries during 1966-69 was the continued very sharp rise in the ratio for aircraft producers, which had an impact even though their share of defense products industries sales declined after early 1966. Communications equipment producers had both a gradually rising I-S ratio and, after late 1967, a rising share of sales. The movement and the high level of I-S ratios in these industries reflect expanded production, in this case defense production. Characteristically these industries have long manufacturing leadtimes. As a result, the inventory accumulation relative to sales was largest in goods-in-process.⁴ This was particularly striking in the aircraft industry.⁵ This development had a clear impact on the goods-in-process I-S ratio for total durables. That ratio, which had been stable during 1963-65, rose sharply from mid-1966 to mid-1967, and remained high through 1969. The rise in the goods-in-process I-S ratio that can be attributed to the aircraft industry accounted for roughly one-half of the rise from mid-1966 to

mid-1967 in the total durables ratio. Then, as the goods-in-process I-S ratio for all other durables fell halfway back to the early 1966 level, the still rising ratio in the aircraft industry sustained the total (table 1).

The share of producers' capital goods industries in the equipment and defense products group dropped during 1966 and 1967 and increased steadily for the remainder of the period. The I-S ratio for capital goods rose sharply from mid-1966 to mid-1967 and then steadied through the end of 1968. The 1966-67 rise was associated with a decline in sales. This was the first period of depressed activity for this group in 4 years, so that some difficulty in adjusting inventory was to be expected. Subsequently, sales showed strength during the last half of 1968 and the first half of 1969 when the I-S ratio dropped moderately for several quarters. Thus, during 1966-67 the I-S ratio for capital goods producers was rising, but their share in the equipment and defense products group was falling; in 1968, changes in both factors were small; only in 1969 did they move together to give a moderate upward push to the I-S ratio of the equipment and defense products group (and thus to the ratio for total durables manufacturing). On the whole, then, the net effect of the two factors was not large.

Trade

The merchant wholesalers' I-S ratio moved up during 1966, reaching a plateau in the fourth quarter which held through the next 3 years. The ratio for wholesalers of nondurable goods showed a slight upward trend after 1966 but generally moved little. The slowdown of economic activity in late 1966 and early 1967 had a widespread impact on durables wholesaling; sales leveled off and then declined, causing substantial inventory buildup and higher I-S ratios. The ratios for most lines of durables wholesaling moved lower over the next 2 years, back to levels which had prevailed before the 1966-67 runup. However, there were two clear exceptions that were largely responsible for the durables wholesaling

ratio being higher during 1967-69 than earlier in the decade. The ratio for electrical goods dealers dropped somewhat after the first quarter of 1967, but because the 1967-69 ratios in both the consumer and the industrial segments were higher than they had been earlier in the decade, the ratio stabilized at a high level in contrast to the downtrend in the first half of the decade. The ratio for the machinery, equipment, and supplies group remained well above earlier levels.

The ratio for retail dealers rose very sharply in 1966. It then fell gradually and by the end of 1968 had returned almost to the 1963-65 level. The ratio for nonautomotive durables rose in 1966 and 1967, as sales slowed in 1966 and declined early in 1967. The ratio remained high during the next 2 years as the net result of diverse component movements. In the lumber-building hardware group, which had had a large sales decline in 1966 and a steep rise in the I-S ratio, the ratio moved down over the period 1967-69. However, the ratio for the furniture and appliance group did not decline after the 1966-67 rise. Within that group, the ratio for appliance-TV-radio stores had shown a sharp rise in 1964-66, and the 1966 level was maintained in 1967-69. The need to carry inventories of color as well as monochrome TV's may explain this shift. The ratio for the heterogeneous "all other" durables category—including outlets for jewelry, books, sporting goods, secondhand goods, optical goods, farm equipment, and bicycles—continued to rise sharply through mid-1968 and was the major source of subsequent sharp moves in the overall ratio for nonautomotive durables retailers. Because "all other" durables is an inventory-intensive grouping (the I-S ratio varied between 3.00 and 4.00), sharp rises and falls in the ratio are generated readily, especially by fluctuations in sales, as was the case during 1967-69.

A drop in automotive dealers' sales in the first quarter of 1966 resulted in a sharp rise in inventories and an even sharper rise in the I-S ratio. Sales also fell in the fourth quarter of 1966 and markedly so in the first quarter of 1967.

4. A similar pattern was observed during the Korean war buildup. See "Distribution and Trends of Manufacturers' Inventories by Stage of Fabrication," *Survey of Current Business*, March 1952, pp. 6-7.

5. The goods-in-process I-S ratio for transportation equipment rose from 0.88 in the first quarter of 1966 to 1.41 in the fourth quarter of 1967. Final stage of fabrication detail by industrial component is not available quarterly. On the basis of data from the Annual Survey of Manufactures it is reasonable to attribute the rise in the goods-in-process ratio for transportation equipment largely to the aircraft industry.

This I-S ratio remained high through early 1967 and then fell sharply in the second and third quarters of that year. A strike distorted the ratio late in 1967, but it then moved steadily up, continuing the uptrend of the 1960's.

The ratio for nondurables retailers

remained steady in 1966-69, due mainly to continued stability in the ratio for the food group and offsetting movements elsewhere—up a few points in the case of the general merchandise group and down a few points in the case of "all other" nondurables.

Recession and Recovery, 1969-72

THE movements of inventories, sales, and the I-S ratio during the 1969-70 recession and subsequent recovery contrast significantly with movements during the other postwar recessions and recoveries (chart 4). In contrast to the inventory liquidations in other recessions, total manufacturing and trade inventories continued a steady rise throughout the recent recession. The contrast is especially striking in the behavior of durable goods inventories, which in the past recessions accounted for most of the typical inventory liquidation. In the recent recession inventories of durables advanced each quarter. This advance in manufacturing and trade inventories produced the largest cyclical peak-to-trough rise in the I-S ratio of the five postwar recessions even though the dip in total sales was comparatively mild.

There were significant differences also in the recovery phases of the business cycle. In other postwar recoveries, the ratio reached a minimum by the third or fourth quarter after the trough and then turned up. The minimums ranged from 88 percent to 96 percent of the ratio's value in the business cycle peak quarter. In the latest recovery, the ratio has declined continuously as sales growth has outpaced inventory growth. However, though protracted, the decline was mild. Four quarters after the trough the ratio was no lower than it had been at the peak, and it was only in the fourth quarter of 1972 (8 quarters after the trough) that it was down to 93 percent of the peak quarter value.

In terms of general factors, this unusual inventory pattern is probably related to fulfilled expectations: first, as evidence pointing to recession

mounted during 1969, expectations counseled moderation in inventory accumulation; second, once the recession began, expectations that it would be relatively short and mild counseled against extensive inventory liquidation.

Manufacturing

During 1970, sales of both durables and nondurables declined, while inventories continued to increase throughout the year. As a result, by the fourth quarter of 1970 (the cyclical trough), the I-S ratio for total manufacturing reached the highest level of any postwar recession (even after abstracting from the effect of the auto strike in that quarter). In 1971 sales recovered rapidly, while inventories did not advance, turning the ratio down. The ratio has moved down since, and by the fourth quarter of 1972 it was close to its 1966 low (table 2).

The ratio for nondurables advanced through 1970, and thereafter moved down steadily. By the end of 1972 it was at the lowest quarterly level of the postwar period. The durables ratio rose steeply in 1970, advancing from its 1967-69 plateau by the same relative amount as it had during 1966-67. Even though the ratio reached an unprecedented high due to the recession and auto strike, it dropped so sharply each quarter thereafter that by the end of 1972 it was very close to the 1963-65 average.

Most durables ratios now stand close to or even below the 1963-65 level. However, the ratio for the aircraft industry remains high. This ratio had risen very sharply during 1970 to well over 5.00 and averaged about the same

during the first three quarters of 1971. Sales fell off during those quarters and goods-in-process inventories (which predominate in the aircraft industry) rose steeply at first and then declined moderately. Beginning with the fourth

CHART 21

Contraction and Recovery Comparisons: Inventories, Sales, and Inventory-Sales Ratios for Total Manufacturing and Trade

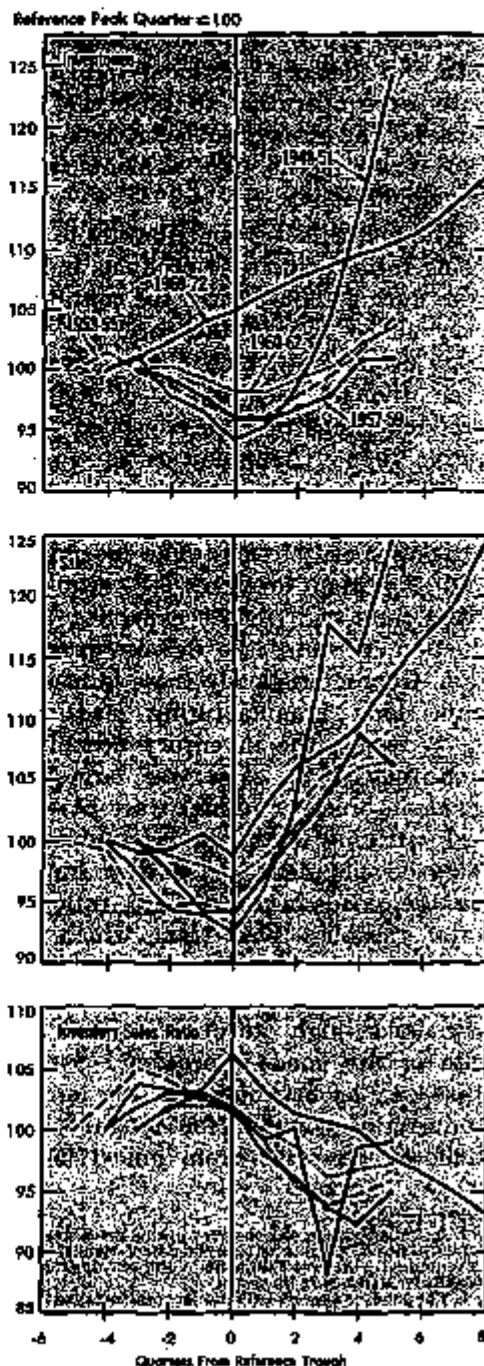


Table 2.—Inventory-Sales Ratios in Manufacturing and Wholesale and Retail Trade

	Total manufacturing and trade	Manufacturing						Wholesale			Retail			
		Total	Non-durables	Equipment and defense products (ex. automotive)		Motor vehicles and parts	Other durables	Total	Non-durables	Durables	Total	Non-durables	Auto group	Other durables
				Total	Aircraft, missiles and parts									
1963-65.....	1.45	1.65	1.25	2.60	2.65	0.87	1.59	1.15	0.87	1.52	1.41	1.19	1.43	2.40
1969:														
I.....	1.45	1.60	1.23	2.59	2.68	.83	1.78	1.11	.84	1.43	1.41	1.17	1.49	2.40
II.....	1.45	1.62	1.25	2.60	2.60	.85	1.78	1.13	.85	1.45	1.47	1.18	1.49	2.40
III.....	1.61	1.67	1.25	2.67	2.77	1.03	1.82	1.15	.88	1.50	1.46	1.18	1.58	2.71
IV.....	1.66	1.71	1.28	2.75	2.77	1.00	1.80	1.22	.91	1.52	1.48	1.21	1.65	2.72
1967-69.....	1.67	1.77	1.27	2.66	2.71	.97	1.92	1.21	.91	1.57	1.46	1.19	1.57	2.70
1970:														
I.....	1.62	1.80	1.28	3.30	4.37	1.14	2.08	1.23	.90	1.58	1.46	1.18	1.77	2.72
II.....	1.64	1.88	1.41	3.38	4.46	1.02	2.09	1.23	.92	1.60	1.47	1.18	1.77	2.68
III.....	1.64	1.90	1.41	3.48	4.92	1.02	2.09	1.24	.93	1.62	1.48	1.18	1.80	2.61
IV.....	1.69	1.98	1.49	3.56	5.25	1.37	2.17	1.26	.97	1.67	1.49	1.17	1.85	2.66
1971:														
I.....	1.64	1.89	1.40	3.49	5.41	.91	2.13	1.25	.92	1.65	1.49	1.20	1.73	2.68
II.....	1.61	1.83	1.38	3.31	4.82	1.00	2.02	1.22	.92	1.65	1.49	1.20	1.75	2.67
III.....	1.60	1.81	1.37	3.33	5.69	.79	2.08	1.23	.92	1.60	1.51	1.20	1.80	2.66
IV.....	1.66	1.78	1.35	3.23	5.31	.65	1.90	1.28	.96	1.64	1.49	1.21	1.68	2.59
1972:														
I.....	1.85	1.72	1.31	3.13	5.19	.64	1.90	1.23	.92	1.67	1.49	1.21	1.69	2.59
II.....	1.82	1.69	1.30	3.00	4.60	.63	1.87	1.23	.91	1.68	1.45	1.21	1.54	2.54
III.....	1.81	1.87	1.30	3.04	4.61	.81	1.84	1.23	.93	1.66	1.43	1.20	1.45	2.48
IV.....	1.45	1.63	1.26	2.01	4.67	.76	1.76	1.21	.92	1.64	1.40	1.16	1.42	2.47

* Preliminary.

quarter of 1971 the ratio dropped as sales growth outpaced inventory growth, but in the fourth quarter of 1972, at 4.57, it remained higher than its pre-recession plateau.

Because of the continuing high ratio for the aircraft industry, the ratio for the equipment and defense products group as a whole remains above the 1963-65 level. If aircraft is taken out of that group, the residual ratio is back down to the 1963-65 level. Rough division of equipment and defense products, as in the earlier section of the study, shows that the ratio for producers' capital goods is back close to its 1963-65 average, largely because the ratio for the nonelectrical machinery group has reached a new low for the 1961-72 period. The ratio for defense products industries is held up by the aircraft industry, even though the ratio for communications equipment, the other major component of defense products industries, has fallen 80 percent of the way from its 1970 peak to its 1963-65 level.

The breakdown of durable goods inventories by stage of fabrication registers the impact of the high ratio that

can be attributed to aircraft. The I-S ratios for finished goods and for materials and supplies are below their 1963-65 levels, while the ratio for goods-in-process inventories, although falling, is well above its steady 1963-65 level. If transportation equipment, of which aircraft is a component, is excluded, the goods-in-process I-S ratio for durables is now below its mid-1960's minimum.

Trade

In wholesale trade, lackluster sales growth during 1970-71, coupled with continuously rising inventories, resulted in a moderately higher and more variable I-S ratio than in the years immediately preceding. Some decline in the ratio took place in early 1972. The kinds of business largely responsible for the higher levels in 1967-69 than in 1963-65—electrical goods, and machinery, equipment, and supplies—continue to have high ratios and are responsible for maintaining the overall durables ratio at a high level. The non-durables ratio is in line with the long-term trend.

The retailers' ratio, having risen gently during 1969, remained level through 1970-71 and fell off sharply in 1972. By the fourth quarter it was about equal to its lowest levels in the early 1960's. The I-S ratio for nondurables has continued generally steady, with perhaps a slight upward movement in 1971 and 1972. In durables, the ratio for automotive dealers, which had been rising in line with its trend, hit a high during the auto strike of the fourth quarter of 1970. Since that time the ratio has moved sharply lower. At first sales increased more rapidly than inventories and then, from the fourth quarter of 1971 to the third quarter of 1972, auto inventories (and as a result total durables inventories) declined. By the end of 1972 there was evidence that the auto group's inventories and the I-S ratio—which is at the 1963-65 level—are lower than dealers would prefer. In other durable goods lines the ratios have been generally falling since early 1970, and by the end of 1972 were lower than in the early 1960's. Only the "all other" durables group has a ratio well above the 1963-65 level.

Conclusion

It is apparent from the preceding discussion that I-S ratios for all groupings except aircraft and wholesale trade are back to 1963-65 or lower levels. These are unusually low levels, because it is unlikely that whatever long-term downward trend in I-S ratios is operative can fully account for them.

The I-S ratios in aircraft remain higher than and in wholesaling are equal to the plateaus to which they climbed in 1966 and remained during 1967-69, but are lower than the ratios reached in the subsequent recession. In terms of the evaluation of more aggregative I-S ratios, developments in the aircraft industry are of importance because of the high level of the ratio and its great

variability. An assessment of the future influence of the I-S ratio in the aircraft industry is difficult not only because it is difficult to forecast the future course of production and sales in this industry, but also because it is difficult to forecast technological and other developments which may lead to changes in the I-S ratios irrespective of the pattern of production and sales.



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